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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,124	05/01/2007	Gary Robinson	05794.00003	1425

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EXAMINER	
PORTNER, VIRGINIA ALLEN	
ART UNIT	**PAPER NUMBER**
1645	

NOTIFICATION DATE	DELIVERY MODE
08/04/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocket@foxrothschild.com

Office Action Summary	Application No.	Applicant(s)
	10/577,124	ROBINSON ET AL.
	Examiner	Art Unit
	GINNY PORTNER	1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 8-41* is/are pending in the application.

4a) Of the above claim(s) *9-29 and 31-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5,8,30 and 41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/2011;5/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3-5, 8-41 are pending. Claims 1, 3-5, 8, 30, 41 are under consideration; all other claims stand withdrawn from consideration as being drawn to a non-elected invention.

Information Disclosure Statement

2. The information disclosure statement filed February 4, 2011 and May 27, 2008 have been considered.

Objections/Rejections Maintained

3. Applicant's arguments filed January 7, 2011 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. The rejection of claims 1,3,5 8, 30, 41 under 35 U.S.C. 102(e) as being anticipated by Ulrich et al (US PG Pub 2004/0171020, filing date July 15, 2002) in light of extrinsic evidence provided by Kolibachuk et al (1993) is traversed by asserting that:

a. The "claims are directed to an extracellular method of regulating quorum sensing in bacteria expressing LuxR or a homolog thereof"

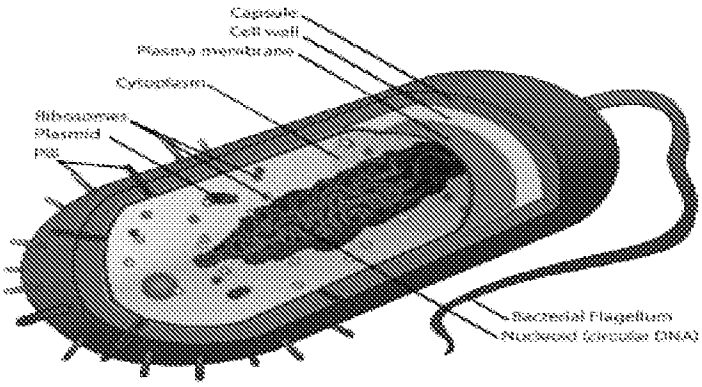
b. That the evidence cited for inherency, Kolibachuk is quoted as making a "suggestion that the N-terminal regulatory domain of LuxR is associated with the cytoplasmic membranes (page 7311, col. 1, lines 16-20)" and concludes

Kolibachuk "provides NO teaching regarding any association of LuxR with the outer membranes."

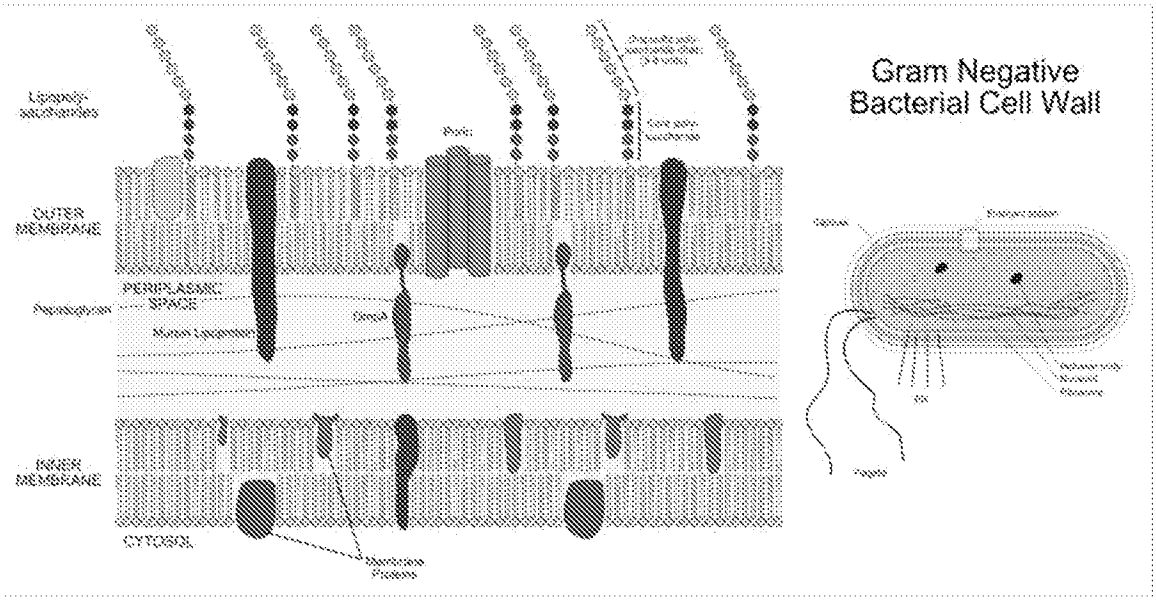
3. The examiner upon further consideration of the instant Specification found the description of Figures 2 and 3 to teach LuxR and LasR to be Cytoplasmic Membrane associated, and not the cell wall outer membrane associated as asserted by Applicant. Instant Specification (pg. 20, p. 4) excerpt immediately below:

> Figures 2 and 3 demonstrate that LuxR and LasR are found on the outer surface of the cell cytoplasmic membrane, as anti-LuxR and anti-LasR respectively are able to bind to the bacteria. The FITC labelled cells are shown as glowing spots against the dark background. In figure 2, there appear to be more labelled cells before the population is quorate (pre-glowing). It is postulated that LuxR and its homologues are only present on the cell membrane before quorum is reached. As quorum is reached, signalling molecules bind to LuxR and its homologues and the resultant complexes are internalised. Therefore there are few molecules of LuxR on the membrane of quorate cells, so antibody cannot bind.

4. The outer surface of the cytoplasmic membrane would be that region bordering on the *periplasmic space* for gram-negative bacteria and is Not the outer membrane/cell wall. The outer membrane has been referred to as the cell wall and the inner cell membrane referred to as the cytoplasmic/plasma membrane as it is contact with the bacterial cell's cytoplasm.



5. The cell wall/outer rmembrane and the cytoplasmic membrane/inner membrane of a gram negative bacteria being spaced apart from each other by a periplasmic space: (see below)



It appears that applicant's Specification uses to the term "bacterial membrane" to refer to multiple locations within a gram negative bacteria, but clearly teaches LuxR and LasR to be *cytoplasmic membrane associated* (see quoted section from the instant Specification cited above). Therefore Applicant's traversal is not convincing in light of the contradictory teachings of the instant Specification relative to applicant's statements, because the instant Specification clearly teaches that LuxR and LasR are associated with the cytoplasmic membrane/inner membrane surface that comes in contact with the periplasmic space and not the outer membrane/cell wall as asserted by Applicant.

Kolibackuk et al teach LuxR to be associated with the cytoplasmic membrane, as does the instant Specification when describing Applicant's drawings set forth in figures 2 and 3 which show the interaction of an anti-LuxR antibody with a gram negative bacteria.

1. Applicant provides Exhibit A/Qin et al as evidence that TraR, a LuxR homolog, is a cytoplasmic membrane associated protein and not associated with the outer membrane/cell wall.

2. The examiner agrees that the instant Specification and Qin et al both teach that LuxR and LuxR homologs are cytoplasmic membrane associated proteins, as does Kolibackuk et al, the reference cited as extrinsic evidence of inherency for the Ulrich et al applied reference against the claims.

Ulrich et al still inherently anticipates the instantly claimed invention as now claimed in light of evidence provided by Kolibachuk et al who teach LuxR homologs are membrane associated, and the anti-LuxR antibodies (antibodies directed to synthase transcriptional regulator, LuxR homolog) are disclosed for administration to a subject in vitro (cells), ex vivo or in vivo [0105] for modulation (reducing or inhibiting) synthase transcriptional regulator activity, the inhibition of this activity resulting in reduction or inhibition of biofilm formation.

3. The rejection is maintained for reasons of record and responses set forth herein.

6. The rejection of claims 1,3-4, 8, 30, 41 are under 35 U.S.C. 102(b) as being anticipated by Taga et al (US PG-Pub 2003/0165932, publication date Sept. 4, 2003, reference cited in US PTO 892 dated December 30, 2009) in light of evidence provided by Kolibachuk et al (1993) is traversed on the grounds that Taga et al "does not teach at least the "LuxR or homologue thereof" "aspect of the claimed invention" of claim 1."

7. It is the position of the examiner that instant claim 4 which depends from independent claim 1, recites the term "LasR", and therefore LasR is clearly encompassed by the scope of independent claim 1. Taga et al teach "[0325] … LsrR: a protein responsible for mediating AI-2 regulation of transcription of the lsr operon."), as is LuxR; therefore LasR and LuxR are functional homologs of each other.

4. Applicant states that claim 1 is directed to an extracellular method and the LasR protein of Taga et al is a cytoplasmic membrane associated protein.

5. It is the position of the examiner that the instant Specification teaches LuxR and LasR to be cytoplasmic membrane associated proteins (see Instant Spec. page 20, paragraph 4). Additionally the preamble of claim 1 does not breathe life and meaning into the claim as the methods step need only administer an antibody to bacteria that has binding specificity to LuxR or a homolog of LuxR, nothing more. This method's step is disclosed in Taga et al.

With respect to Applicant pointing out the fact that LasR is taught by Taga et al to be a cytoplasmic membrane protein, it is the position of the examiner that Taga et al carries out the same or equivalent methods step of administering an antibody to a bacteria, the antibody being specific for a LasR, a LuxR homolog, which is the same or equivalent methods step that administers the same or equivalent composition to a bacteria for the same or equivalent purpose of inhibiting or preventing biofilm formation caused by gram negative bacteria is disclosed and taught by Taga et al

Despite the fact that the applied reference does not discuss the outer membrane location of a LuxR homolog, Taga et al teach LasR specific antibodies to function as quorum sensing blockers [0244 ….. **Antibodies** raised to LsrA, LsrB, LsrC, LsrD, LsrE, LsrF, LsrG, **LsrR,** LuxP or LuxQ or homologues thereof, can inhibit the activation of bacterial pathways associated with virulence."], to include biofilm formation: See Taga et al paragraph "[0258] It is known that quorum sensing blockers can reduce protease production by 50% in some strains of bacteria but the discovery that certain compounds can substantially eliminate protease production imparts clear clinical advantages. Furthermore, the unexpected finding that biofilm formation can be inhibited or prevented by quorum sensing blockers leads to the reasonable conclusion that other quorum sensing blockers that are known to exhibit quorum sensing blocking in other systems, such as protease production, will also be effective against biofilm formation. ". Therefore, Toga et al still anticipate the instantly claimed invention as now claimed in light of extrinsic evidence provided by Kolibachuk et al for reasons of record and responses set forth herein.

New Grounds of Objection/Rejection

Specification

1. The use of the trademark LUMICOM [tm], at page 26, last paragraph, line 4, has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 102

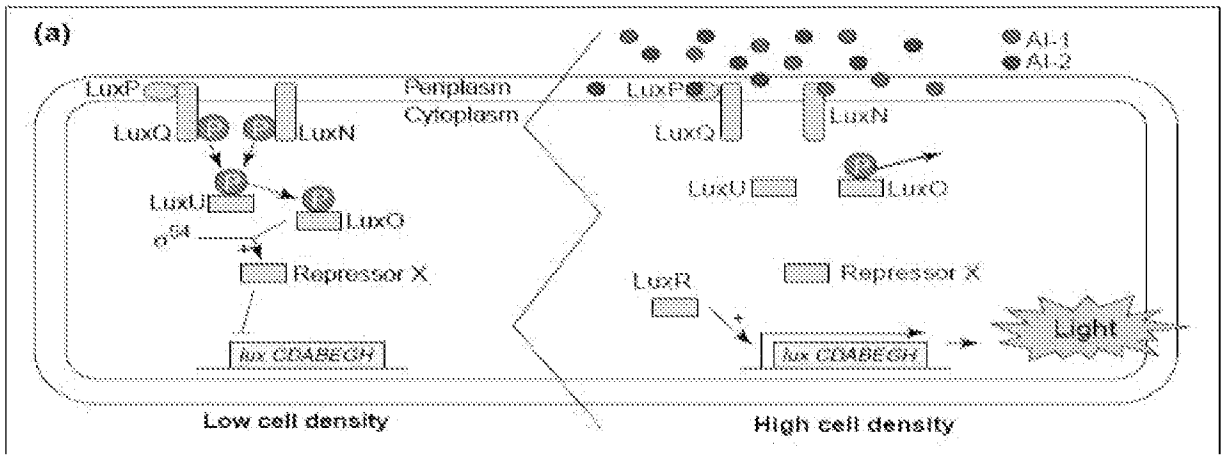
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,3, 8, 30, 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Bassler et al (US PG-Pub20030148414 A1, published Aug 7, 2003) in light of extrinsic evidence provided by Raffa et al (2005) that teach that LuxP is a LuxR homolog.

4. Bassler et al claim a method of habiting biofilm formation, the methods step administers (see [0101,0102-0106])/contacts (see Bassler et al, claims 88, 90 and 94) a bacterium with a compound capable of regulating biofilm formation, the compounds of Bassler including antibodies specific to LuxP, a LuxR homolog.

5. LuxP is a protein located within the periplasmic space of gram negative bacteria (see image below for LuxP), and associated with the outer surface of the cell cytoplasmic membrane of gram negative bacteria.



6. Bassler et al disclose anti-LuxP antibodies which are able to inhibit the activation of bacterial pathways associated with virulence and biofilm formation when administered to a bacteria:

7. [0095] … Antibodies raised to LuxP or LuxQ, or homologues thereof, can inhibit the activation of bacterial pathways associated with virulence. Thus, LuxP and LuxQ provide common antigenic determinants which can be used to immunize a subject against multiple pathogen-associated disease states. …Thus, it is envisioned that methods of the present invention can be used to treat pathogen-associated disease states.

8. [0168] The term "antibody" as used herein is meant to include intact molecules of polyclonal or monoclonal antibodies, as well as fragments thereof, such as Fab and F(ab').sub.2'. For example, monoclonal antibodies are made from antigen containing fragments of a protein by methods well known to those skilled in the art (Kohler, et al., Nature, 256:495, 1975).

9. The antibodies of Bassler are compounds/polypeptides that are disclosed to have the ability to inhibit the activation of bacterial pathways associated with virulence, to include biofilm formation. See [0021, 0095, 0168, 0101-0106]

10. [0021] In another aspect, the invention provides a method for regulating bacterial biofilm formation comprising contacting a bacterium capable of biofilm formation with a compound capable of regulating biofilm formation, wherein the compound regulates autoinducer-2 activity.

While Bassler et al does not teach LuxP to be a LuxR homolog, inherently LuxP serves as homolog of LuxR in light of extrinsic evidence provided by Raffa et al(see Raffa et al, 2005 (page 419, col. 1, paragraph 5, line 6) who teach LuxP is a LuxR homolog. The antibodies of Bassler et al directed to and specific for LuxP are able to inhibit biofilm formation [0113, 0118] and disclose the methods step of administering the anti-LuxP antibodies to a bacterium. Inherently Bassler et al anticipates the instantly claimed invention.

Atlas Powder Co. V IRECA, 51 USPQ2d 1943, (FED Cir. 1999) states Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art...However, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render

the old composition patentably new to the discoverer. The Court further held that □this same reasoning holds true when it is not a property but an ingredient which is inherently contained in the prior art.

Conclusion

1. This is a non-final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GINNY PORTNER whose telephone number is (571)272-0862. The examiner can normally be reached on flextime, but usually M-F, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ginny Portner/
Examiner, Art Unit 1645
July 29, 2011

/Mark Navarro/
Primary Examiner, Art Unit 1645